

SYSTEMS AND METHODS FOR DISTRIBUTING SOLDER PASTE USING  
A TOOL HAVING A SOLDER PASTE APERTURE WITH  
A NON-CIRCULAR CROSS-SECTIONAL SHAPE

5 ABSTRACT OF THE DISCLOSURE

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10 The invention is directed to techniques for distributing solder paste using a tool that defines a solder paste aperture having a non-circular cross-sectional shape. When the non-circular shape coincides with a pad and at least a portion of a stringer leading to the pad during a solder paste distribution process, solder paste is deposited over the pad and the stringer portion. Since solder paste now resides on the stringer portion, solder is not drawn from the pad toward the stringer portion during the soldering process as with some conventional situations. Rather, solder within the solder paste that resides on the stringer portion tends to adhere to the stringer portion, while some of the solder volume over the stringer pulls back to join the solder over the pad due to surface tension of the solder.

15 The end result is a robust solder joint between the pad and corresponding component contact. Furthermore, the non-circular shape of the aperture allows for apertures that are larger in size than apertures for stencils that do not implement conventional overprinting approaches thus reducing the likelihood of clogging. One arrangement of the invention is directed to a solder paste distribution system having a

20 base, a tool holder coupled to the base, and a solder paste distribution tool coupled to the tool holder. The solder paste distribution tool includes a support member that couples to the tool holder, a distribution member that defines a solder paste aperture having a non-circular cross-sectional shape, and a fastener that secures the distribution member to the support member.